PHILADELPHIA MEDICAL TIMES.

SATURDAY, JULY 31, 1875.

ORIGINAL COMMUNICATIONS.

PHYSIOLOGICAL ACTION OF GELSEMIA.

BY J. OTT, M.D.,

Demonstrator of Physiology, University of Pennsylvania.

GELSEMIA was first procured in a pure state by Prof. Wormley. Mr. Henry Kollock, C. L. Eberle, and Prof. Maisch also obtained it, but in an impure state. The alkaloid is always found combined with an acid called gelseminic. As an average of several experiments, Prof. Wormley states that there are about 3.20 grains of gelsemia in eight fluidounces of Tilden's fluid extract. Wormley said one-tenth of a grain of chloride of gelsemia given by the mouth in a cat caused frothing, in twenty minutes great weakness of extremities, walking with much uncertainty; in forty minutes extreme prostration, entire inability to walk, plaintive cries. Six hours after taking the poison the animal was comparatively well, although the gait was uncertain. Three days afterwards, in the same cat, one-eighth of a grain of gelsemia in shape of chloride caused in fifteen minutes great distress, moaning; in forty minutes great prostration, great difficulty in moving, the legs giving way; progression being as often backwards as forwards; pulse 230, very feeble; respiration gasping, greatly reduced; pupils dilated to fullest extent. Death in an hour and a half after taking the poison, without convulsions.

Bartholow* experimented with an aqueous extract of gelseminum and a little gelsemia obtained from Wormley.

He concludes that in cold-blooded animals it acts on the nerve-centres, paralyzing the sensory ganglia, and afterwards the motor; that it does not affect muscular irritability of the peripheral nerve-fibres. In warm-blooded animals the same effects were observed, save only that the motor centres were the first attacked, instead of the sensory; that it kills through the respiratory apparatus; that in a pigeon it reduced the temperature from 107° F. to 104° F., and in a kitten from 102° F. to 98° F.; that there is no antagonism between it and strychnia; that it dilates the pupil. My gelsemia was made by Messrs. Hance Bros. & White, of Philadelphia. It was yellowish, odorless, with a bitter taste; concentrated sulphuric acid added to a small quantity of it produced a reddish solution, which when moderately heated passed into a fine purple, and nitric acid gave with it a greenish color. It undoubtedly contained some resin. The solution that I used was neutral, and each cubic centimetre contained one centigramme of gelsemia dissolved by acetic acid. On account of the small quantity of the alkaloid in my hands, I also made some experiments with Tilden's fluid extract, a concentrated tincture representing in each fluidounce four hundred and eighty grains of the root.

* Practitioner, October, 1870.

ACTION ON THE NERVOUS SYSTEM.

Exp. I.—Very large frog, received at 8.23 A.M. .02 gramme of gelsemia subcutaneously; remains quiet. 8.35 A.M., has a crouching attitude, sensibility much diminished. 8.50 A.M., .04 gramme subcutaneously. 9.35 A.M., .02 gramme subcutaneously. 9.50 A.M., the lower jaw is commencing gradually to relax; moves about occasionally. 10 A.M., croaks and struggles some, suddenly turns himself on his back, in a state of convulsive movements; sensibility exaggerated; twitching of muscles of the extremities for a few minutes. 10.22 A.M., sensibility nearly lost, although movement retained. 10.35 A.M., animal dead. The peripheral end of sciatic irritable at forty-two centimetres Dubois coil; the gastrocnemius directly irritable at twenty-nine. Section of cord gives a slight twitch in extremities.

Exp. II.—Very large frog, received at 11.7 A.M. .06 gramme of gelsemia subcutaneously. 11.24 A.M., sensibility diminished. 12.20 P.M., sensibility very little; upon pinching makes vigorous movements; lies with extremities extended; muscles of lower jaw relaxing. 12.45 P.M., .02 gramme subcutaneously. 1.40 P.M., makes forcible movements of extension with posterior extremities; sensibility very small. 2.10 P.M., .02 gramme subcutaneously. 2.45 P.M., frog dead. Peripheral end of sciatic irritable at twenty-nine centimetres; muscles directly irritable at seventeen centimetres; spinal cord non-excitable; heart beating twenty times per minute.

The above experiments show that gelsemia produces loss of sensibility, want of co-ordination and paralysis of motor power, and finally death. The loss of sensation always precedes that of motion.

Exp. III.—Frog with right iliac artery and vein tied, received at 8.35 A.M. .04 gramme of gelsemia; hops away. 8.50 A.M., sensibility much diminished; 8.54 A.M., .02 gramme subcutaneously. 9.35 A.M., .02 gramme; sensibility greatly reduced; lower jaw hanging down; lies with extremities stretched out; loss of co-ordination. 10.5 A.M., suddenly struggles with posterior extremities. 10.22 A.M., sensibility nearly lost; can move when pinched. 10.23 A.M., dead. Peripheral end of sciatic on poisoned side is excitable at thirty-seven centimetres; on normal side at forty-three centimetres; no reflex action by irritating central end of sciatic; thrusting probe down the spine gives a few feeble twitches; the gastrocnemius on sound side by direct irritation responds at twenty-eight centimetres; the gastrocnemius of poisoned side is excitable at same distance of secondary coil from the primary.

This experiment shows that the poison attacks the sensory ganglia first, and then gradually paralyzes the motor ganglia; that it has no action on the muscular system.

Exp. IV.—Rabbit; at 4.25 P.M. received .01 gramme gelsemia per jugular. 4.27 P.M. to 4.31 P.M., .04 gramme gelsemia. After each injection there were convulsive movements. 4.33 P.M., the rabbit seems unable to move; feet slide from under him; muscles of neck seem especially weak, as head falls down on floor; rolls over on side occasionally. 4.40 P.M., convulsive movements of the fore extremities and muscles of lower jaw; the jaws snap together; violent expiratory movement, accompanied with a crying noise; pupil dilated. 4.41 P.M., animal dead; cord gives a few very feeble twitches on probe-thrust; motor nerves excitable; heart beating.

Exp. V.—Pigeon; at 12.35 P.M., received subcutaneously 2 5 cubic centimetres of Tilden's fluid extract of gelsemium. At first he walks off with a slight limp in the leg which received the poison; closes his eyelids frequently; remains stationary, with commencing ruffling of feathers. 12.40 P.M., sits down. 12.42 P.M., vomiting of food; the closing of eyes is less frequent; has a reeling walk. 12.55, respirations nine to twelve per minute. 1 P.M., eyelids nearly closed; feels and hears; staggers greatly; raises head with difficulty. 1.30 P.M., flapping of wings and great agitation, and then death ensues; spine not excitable; muscles are. When poles are placed over eye, the pupil contracts, and when removed it rebounds; no lesion discoverable.

Exp. VI.—3.10 P.M., rabbit received subcutaneously four cubic centimetres of fluid extract of gelsemium. 3.15 P.M., the extremities of feet lose their power, although the animal manages to locomote. 3.40 P.M., rolls backward on long axis; moves about; great difficulty in expiratory act; pupils dilated. 4.5 P.M., death. Right side of heart filled with blood; left side flaccid, and nearly empty; heart beating feebly.

The above experiments show that gelsemia is a respiratory poison; that it attacks the motor ganglia, and finally the sensory, reversing the order as compared with cold-blooded animals.

EFFECT ON THE CIRCULATION.

That the method of experimentation may be better understood, I give a short résumé of cardiac physiology as taught at present.

The heart contains ganglia which send motor fibres to the cardiac muscle. In addition to motor ganglia there are other ganglia, called regulating ganglia, which co-ordinate the action of the heart, and act on the muscular fibres of the heart through the motor ganglia. The regulating ganglia oppose a certain resistance to the transmission of motor impulses to the cardiac muscle,—that is, governing the rhythm, and preventing the motor ganglia from exhausting themselves by irregular and excited action. Although the heart contains its own power of action, yet there are afferent and efferent nerves which play an important part in its movements: the pneumogastrics when irritated slow the pulse and augment its force, whilst the accelerators increase their number, but diminish their power. The pneumogastrics are especially excited by carbolic acid, decrement of temperature, and the sad emotions, whilst the accelerators are particularly thrown into action by the exhilarating emotions, increment of temperature, and oxygen. The brain also takes part in the regulation of the circulation through the vaso-motor centre situated in the medulla. This centre regulates the calibre of the small arteries, diminishing or increasing the amount of blood flowing through them. The cardiac afferent nerves just described can be thrown into increased action by sensations through the terminations of the sensory nerves in any section of the body: hence the irritation of any portion of our skin can modify the amount of blood which flows through our body in a certain time, thus altering by necessity the functions of other organs. This fact explains the action of many external remedial agents, as baths, sinapisms, actual cautery, etc. The afferent nerve-fibres of the heart are the depressors of Ludwig and Cyon; they are the mechanism by which rupture of the heart by great arterial tension is avoided; as an excited action of the vaso-motor centre might cause. They convey the impulse from the heart to the vaso-motor centre which is paralyzed, and thus the small arteries are relaxed and the heart empties itself, the tension decreases, and everything works freely; they are the safety-valves of the heart, similar in function to those found on steam-engines. These nerves also convey to the brain the sensations of a light, heavy, or palpitating heart.

In a pamphlet* published some time ago, I recorded some experiments on the circulation with an aqueous extract of gelsemium. As there were many other organic and inorganic bodies necessarily introduced with the gelseminate of gelsemia, the observations can only be of value as confirmatory of the action of the alkaloid. In the main they support the conclusions drawn from the following experiments. The circulation as influenced by this poison was studied on rabbits benumbed by sulphate of morphia, both in the interests of humanity and the experiment itself. The pulse and pressure were noted by Ludwig's mercurial manometer on the drum of his registering apparatus. The rate of movement was marked on the drum by an electro-magnet every second. By a lever attached to the electro-magnet the beginning and end of each injection were registered, as well as the time during which a nerve was irritated. The instruments used for irritation were one Grove cell eighty-one millimetres high and fifty-eight millimetres in diameter, Dubois-Reymond's induction apparatus, and Ludwig's electrodes. As the poison caused convulsive movements, curare was used to eliminate the action of the muscular system on the circulation. The gelsemia was injected towards the heart through the jugular or one of its branches, no air being allowed to enter; artificial respiration similar to normal was kept up, by an apparatus on the principle of Sprengel's blower, at regular intervals, by an electro-magnet and metronome: the carotid artery was used for kymographic observations. The blood-pressure is given in millimetres of mercury, and the pulsations for periods of fifteen seconds.

Exp. I.—Rabbit; tracheotomy; jugular and carotid prepared; curare; artificial respiration.

Time.	Pulse.	Pressure.	
	60	102	
A.M.			Gelsemia .01 gramme.
9.25.00	60	88	
9.25.45	52	98	
9.26.45	55	99	
9.27.45	54	97	
9.49.45	56	90	
9.57.15	45	60	
9.59.00	52	50	
10.22.00	49	38	

Exp. II.—Small rabbit; tracheotomy; jugular and carotid prepared; curare; artificial respiration.

* Cocain, Veratria, and Gelsemium. Toxicolo_ical Studies, 1874.

Time.	Pulse.	Pressure.	
	51	72	
P.M.			Gelsemia .01 gramme.
6.0.15	51	36	
6.0.30	50	32	
6.0.45	46	28	
6.1.00	45	22	
6.1.15	46	26	
6.2.45	46	23	
6.3.00	45	23	
6.3.45	44	26	
6.5.00	48	24	
6.6.15	46	25	

The above experiments demonstrate that in gelsemia we have an agent which reduces the pulse and pressure, the latter greatly.

Now, physiologically, the pneumogastrics either by central or peripheral stimulation have the ability to reduce the pulse.

The pressure can be reduced by diminished tonus of the vaso-motor system or weakened heart.

That I might find out if gelsemia reduced the pulse-frequency by central stimulation of the pneumogastrics, they have been divided in the following experiment:

Exp. III.—Rabbit. Tracheotomy; carotid and jugular prepared; vagi cut; curare; artificial respiration.

Time.	Pulse.	Pressure.	
A.M.	51	92	
			Gelsemia .01 gramme.
11.36.30	51	53	
11.36.45	52	68	
11.37.15	48	46	
11.37.45	46	40	
11.38.30	44	28	
11.39.45	32	22	
11.46.15	38	18	
11.54.45	39	20	
11.55.00	33	16	Vagus irritated with Dubois secondary coil at 1 for six seconds; one Grove cell.
11.56.00	37	26	
12.00.15	40	36	Vaso-motor centre irritated indirectly with Dubois coil at 1 for fourteen seconds.

The same sequence of events takes place, so that gelsemia does not reduce the pulse through central stimulation of the pneumogastrics. In atropia we have an agent which is capable of removing the inhibitory power of the peripheral end of the vagi on the heart.

The succeeding experiment shows that even after paralysis of the inhibitory ganglia seated in the heart, gelsemia produces the same result.

Exp. IV.—Rabbit. Tracheotomy; vagi paralyzed by atropin, as tested by strong currents; curare; artificial respiration.

Time.	Pulse.	Pressure.	
P.M.	58	126	
			Gelsemia .01 gramme.
5.18.15	58	106	
5.18.30	52	106	
5.18.45	54	114	
5.19.15	50	126	
5.25.00	53	120	
5.37.40	50	94	
			Gelsemia .01 gr.
5.38.55	52	66	
5.39.10	47	55	
5.42.05	47	88	
5.46.20	50	80	
			Gelsemia .005 gr.
5.46.35	45	67	
6.02.53	42	66	
6.39.53	42	44	

To study the action of a poison on the heart itself, it is necessary to divide the afferent and efferent cardiac nerves in the neck (that is, the pneumogastrics, sympathetics, and depressors), and to remove the influence of accelerators and vaso-motor centre by section of the cord between the occiput and the atlas. In this manner the following experiment was performed:

Exp. V.—Rabbit. Tracheotomy; all the cardiac nerves in the neck cut; the cord divided between the atlas and occiput; the hemorrhage checked by bovista; curare; artificial respiration; section of cord verified by post-mortem.

Time.	Pulse.	Pressure.	
A.M.			
11.34.00	43	18	
			Gelsemia .01 gramme.
11.54.45	43	15	
11.36.00	42	15	
11.37.00	37	15	
11.38.00	37	15	
11.40.00	36	16	
11.41.00	37	16	
11.41.25	36	16	
			Gelsemia .01 gramme.
11.41.35	35	14	
11.42.35	34	13	
11.43.35	36	14	
11.44.35	34	13	

This experiment demonstrates that the cause of the slowing of the pulse resides in the heart itself, as well as part of the reduced pressure. Although the fall of pressure is partly to be explained by decrease of cardiac irritability, yet it is desirable to prove how far the vaso-motor nerves and the muscles in the arterial walls participate. When in the small blood-vessels the circular muscles relax, thus dilating the vessel, there is less blood flowing into the right ventricle, and consequently less into the left ventricle, which, by necessity, throws less blood into the arterial system than before in the same unit of time: consequently this is one factor of diminished pressure.

When the small arteries are dilated there is less resistance to the onward flow of blood, and, of course, less pressure in the arterial system, which is another factor.

When the pressure is diminished, according to the German school, the pulse is lessened. The grand agent in preserving the arterial pressure at its height is the vaso-motor centre. That the vaso-motor centre is not paralyzed to direct irritation the following experiment proves; but there is a probability that its tonus is lowered as the fall of pressure is greater, and more rapid when the centre is active than when its influence is removed.

Exp. VI.—Rabbit. Vagi paralyzed by atropin; tracheotomy; sciatic nerve prepared; Ludwig's gimlet-electrodes screwed into the atlas and occipital bone; Pohl's commutator used, so that the induced current could be sent either to the gimlet-electrodes or the electrodes bearing the sciatic by simply rolling the cradle.

Time.	Pulse.	Pressure.	
A.M.	55	80	
			Gelsemia .01 gramme.
10.35.15	53	70	
10.35.45	52	78	Vaso-motor centre irritated directly for two seconds; secondary coil at 8.
10.38.24	52	50	
			Gelsemia .01 gramme.
10.38.39	51	31	
10.38.54	47	18	
10.39.19	52	18	
10.39.34	53	72	
10.54.11	43	5	
10.54.26	42	3	Depressor nerve irritated eight seconds; Dubois coil at 8.
10.58.30	48	8	
11.06.45	46	22	Vaso-motor centre irritated directly for eight seconds; Dubois coil at 8.

The deductions from the above experiments are:

1. That gelsemia reduces the pulse and the pressure; the latter greatly.
2. That the pneumogastrics are not affected by it.
3. That it reduces the pulse by an action on the heart itself, probably through a paralyzing action on the excito-motor ganglia.
4. That it reduces the pressure through diminished cardiac irritability and decreased vaso-motor tonus.
5. That the functions of the depressor are not interfered with.

ACTION ON THE RESPIRATION.

Exp. I.—Rabbit. T-shaped tube in trachea; jugular prepared; Marey's polygraph registering respiration on Ludwig's drum; the rapidity of the movement of drum being noted by an electro-magnet, marking seconds.

Time.	Resp. for 15".	
	16	
		Gelsemia .01 gramme.
4.34.00	19	Struggle, convulsive movement.
4.34.15	16	
4.34.30	12	
4.34.45	12	
4.35.15	11	
4.36.45	11	
4.37.00	11	
4.40.15	11	
4.53.21	11	
5.01.40	11	
		.005 gramme gelsemia.
5.01.55	11	
5.02.55	10	Convulsive movements.
5.03.35	11	
5.05.15	9	Opisthotonos. Gelsemia .01 gramme injected.
5.05.30	12	
5.05.45	11	
5.08.00	7	
5.14.00	6	
5.25.15	1	

The above observation shows that gelsemia gradually reduces the number of respirations. The paralyzing effect on the respiratory centres is the cause of this action, as the poison does not attack either the pneumogastrics, the striated muscles, or the motor nerves.

ACTION ON THE TEMPERATURE.

The following experiment was made with a specimen of gelsemia furnished by Charles McIntire, Jr., formerly Assistant Professor in Lafayette College. The temperature is rectal.

Exp. I.—2 P.M., kitten received subcutaneously .004 gramme of gelsemia in shape of chloride. 2.05 P.M., weakness in posterior extremities; trembling of head and ears; pupil in diameter five millimetres; temperature $101\frac{3}{5}°$ Fahr. 2.25 P.M., .002 gramme gelsemia. 2.37 P.M., sinking down on fore-legs, drooping of head, difficult expiration. 2.45 P.M., temperature $101\frac{8}{10}°$, pupils same. 2.50 P.M., cries, makes staggering efforts to walk, but sinks into a prone position; backward movements; no co-ordinating power; sphincters give way. 3.40 P.M., .004 gramme gelsemia. 3.55 P.M., temperature $100\frac{3}{10}°$; pupil five millimetres. 4.25 P.M., .004 gramme. 4.56 P.M., pupil six millimetres; .002 gramme gelsemia; temperature $99\frac{1}{10}°$. 5.5 P.M., pupil seven millimetres; reflex movement in cornea. 5.10 P.M., .004 gramme gelsemia; death; chest opened; auricles beating, but not ventricles; intestinal peristalsis present; cord not excitable; muscular irritability good; no reflex action; heart excitable when electricity applied.

Exp. II.—Rabbit. Temperature $103\frac{2}{5}°$ per rectum. 8.40 A.M., received subcutaneously $2\frac{1}{2}$ cubic centimetres of fluid extract of gelsemium. 8.45 A.M., temperature $103\frac{1}{5}°$. 8.52 A.M., four cubic centimetres fluid extract gelsemia. 9 A.M., temperature $103\frac{1}{5}°$. 9.12 A.M., temperature $102\frac{2}{5}°$. 9.45 A.M., temperature $101\frac{1}{5}°$. 10.20 A.M., injection four cubic centimetres fluid extract gelsemium. 10.30 A.M., temperature 99°. 11 A.M., $98\frac{3}{4}°$. 11.5 A.M., animal dead.

These experiments show that gelsemia reduces the temperature.

To make more complete and practical the study of the action of gelsemia, I give the following experiments on man,—cases of poisoning. Substantially they are as follows:

Case I.—Reported by R. P. Davis. Lying on left side; muscular relaxation; face somewhat congested; double vision; vertigo; pupils dilated, but responding to different degrees of light; eyelids half closed, with apparent inability to move them; lower jaw drooping; his tongue, to use his own expression, "so thick that he could hardly speak;" skin warm and moist; pulse small and feeble; neither purging nor vomiting; respirations diminished; great numbness of the extremities; surface cold and congested; pulse almost imperceptible. Death took place in about two hours and a half after taking a tablespoonful of Tilden's fluid extract; unconsciousness preceding death for an hour.

Case II.—Reported by R. P. Davis. After same dose, double vision, vertigo, pupil widely dilated, complained of blindness, staggered in walking, deep inspirations, and numbness of whole body; no loss of consciousness at any time; awoke next morning weak and dizzy. The patient in the first case was a

very small, nervous, delicate man; the second case was the reverse, and, besides, he received an emetic soon after taking the poison.

Case III.—Prof. Wormley reports the following case: Young married woman, pregnant, took three teaspoonfuls of Tilden's fluid extract. In two hours complained of pain in stomach, nausea, and dimness of vision. These symptoms were followed by great restlessness, ineffectual efforts to vomit, and free perspiration over the body. At the end of five hours pulse feeble, irregular, and sometimes intermittent; great prostration, irregular and slow respiration; skin dry, extremities cold, pupils expanded and insensible to light; eyes fixed, and inability to raise the eyelids. Death occurred in about seven hours and a half after taking the poison. No convulsions preceding.

Prof. Wormley thinks that these three teaspoonfuls could not have contained more than a sixth of a grain of the alkaloid.

Case IV.—Reported by Dr. Main. He took one drachm of fluid extract of gelsemium. Nearly blind; control over upper eyelids was almost entirely lost; flexor muscles of hands and arms paralyzed; extensors nearly so; sensation in hands and arms blunted, but not in proportion to loss of motion. Before muscles affected, disagreeable sensation in head; mind clear; hands suffered more than the legs.

Case V.—Reported by Dr. Freeman, of Brooklyn. Boy, æt. three years. After taking fifty minims of tincture of gelsemium (made by maceration of four ounces of the root to a pint of dilute alcohol), died in two hours. The symptoms were double vision, staggering gait, complete muscular relaxation.

Case VI.—Reported by Dr. Freeman. Girl, æt. nine years; after dessertspoonful of tincture, had dimness of vision, loss of muscular power, and death in less than two hours.

Case VII.—Reported by Dr. Freeman. Boy, æt. about three years, was to take a teaspoonful every two hours of a mixture containing ten grains of sulphate of quinine, a drachm of tincture of gelsemium, and five drachms of syrup. After first dose, prostration, staggering; in about half an hour after second dose, limp as a rag; pupils dilated, froth, heart beating feebly and slowly, pulse imperceptible at the wrist, could not swallow. Death in about an hour after the second dose.

Case VIII.—Reported by Dr. Pinkham, of Lynn. Double vision, blindness, numbness, oppression, unconsciousness, stertorous, very imperfect breathing, countenance lividly pale, lower jaw drooping, leaving mouth wide open; eyelids partially closed, motionless; pupils moderately dilated; pulse 100 per minute, regular, weak. After friction and stimulus for an hour and a half, consciousness returned, but recovery was not complete for several days, the principal complaint being great prostration, muscular weakness, particularly of the elevators of the lower jaw, eyelids, and muscles of arm. After the return of consciousness, speech was intelligible only when the jaws were supported. The tongue during the poisoning was stiff, and voice guttural. The dose was pretended to be forty minims of fluid extract, and the patient was a woman.

Case IX.—Reported by Dr. Boutelle, of Boston. Man, æt. twenty-four, at 1 A.M. took a teaspoonful of Tilden's fluid extract of gelsemium. In fifteen minutes he repeated the dose; his pain was soon relieved; eyes felt heavy, and in about half an hour complained of choking; soon arose, struggling for breath, pushing his fingers into his throat as if trying to tear it open. He staggered reeling from one room to the other, as though intoxicated, and shortly afterwards threw himself on the floor, and became unconscious. 4 A.M., respirations gasping, three or four per minute; pulse rapid and feeble; unconscious, could not be roused; pupils dilated, not responding to light; eye could be touched without any contraction of the lids; skin moist; extremities cold; pulse grew slower and weaker. Death in three hours and forty-five minutes after taking the poison, without any convulsions occurring at any time.

An analysis of the above cases of poisoning gives the following as the course of symptoms: Disordered double vision, ptosis, want of co-ordination in the movements, disagreeable feeling in the head, great muscular relaxation, lower jaw drooping, tongue stiff, sensation blunted, pupils dilated, respiration slow and irregular, pulse slow and feeble, surface cold and congested, unconsciousness, and death.

On comparison of its effects on man and warm-blooded animals, the analogy is complete. In man there is the same paralysis of motion, want of co-ordination, diminished sensibility, relaxation of muscles of the jaws and the rest of the body, diminished pulse and pressure, lessened respiration, decreased temperature, and dilated pupils.

The following résumé expresses our conclusions in regard to gelsemia:

1. In cold-blooded animals it paralyzes first the sensory ganglia, and then the motor ganglia in the central nervous system. This order is reversed in warm-blooded animals.
2. It diminishes the pulse and pressure.
3. This decrease of pulse-rate is due to lessened irritability of the excito-motor ganglia of the heart.
4. The fall of pressure is due to diminution of cardiac irritability and vaso-motor tonus.
5. It decreases the respiration through a paralyzing action on the respiratory centres.
6. It dilates the pupils.
7. It reduces the temperature.

The above investigation was made in the Physiological Laboratory of Prof. F. G. Smith, University of Pennsylvania.

OXYGEN IN CONGESTION OF THE BRAIN (*Boston Journal of Chemistry*, July, 1875).—A French physician reports to the Academy a case in which he has succeeded in curing grave congestion of the brain, along with paralysis of the whole right side, by making the patient inhale pure oxygen: from the first inhalation the patient got relief, and motion and sensibility returned by degrees.

A CASE OF CHOREA IN THE NEGRO.

BY W. T. SKINNER, M.D.,

Glasgow, Delaware.

MY attention having been called to the fact, by the inquiries of Dr. S. Weir Mitchell, that chorea in the negro is extremely rare, I deem this sufficient apology for reporting the following case:

May 22, 1875.—D. B., æt. 18, colored (of pure African descent), servant-girl from Philadelphia, has suffered for some time with subacute rheumatism, at the termination of which she was suddenly seized with choreic movements mostly affecting the muscles of the head and neck, characterized by a continual bobbing or shaking of the head. The legs and arms are affected only when she attempts to use them. The movements are all increased by exercise and diminished by rest, and entirely suspended when the patient lies down. The tongue can be thrust out only by some effort. The face is unaffected.

Pulse 144. Slight murmur at the apex, heard most distinctly a little external to the nipple. Menstruation regular. No spinal tenderness or other evidence of hysterical temperament.

I cannot get her family history; I only learn that she has lost several brothers and sisters, and therefore suppose it is not very favorable.

Her nutrition is bad. She is directed to make use of liberal diet, to take exercise moderately and frequently in the open air; and, in the way of medicines, cod-liver oil, syrup of iodide of zinc, and tincture of digitalis are ordered.

June 18.—The improvement has been gradual. She now has intervals of rest from the movements, but they are called into operation by any attempt at exercise, such as walking, or even standing. Pulse 80, and regular; cardiac murmur unchanged. General condition much improved. Same remedies continued, and strychnia, one-twenty-fourth gr. thrice daily, added.

July 14.—Patient still improving; same treatment continued.

NITRITE OF AMYL IN HYSTERICAL CONVULSIONS, THE COLD STAGE OF INTERMITTENTS, AND CHLOROFORM-NARCOSIS.

BY RUFUS R. HINTON, M.D.

CASE I.—Last February I was called to see Mrs. R., æt. 27; she was subject to hysteria, and frequently had convulsions at the time of her monthly sickness. At the time of my visit she had had convulsions at intervals of four or five hours, for four days previous. I found her in a series of subintense convulsions; the pupils, pulse, and temperature were normal. As the patient had been treated with the bromides, valerian, etc., without relieving the spasms, I concluded to use the nitrite of amyl by inhalation in from three- to five-drop doses; and in two hours from the time I commenced the treatment with the nitrite of amyl, all symptoms of convulsions were relieved, and the patient has had no convulsions to this date.

I have used the nitrite of amyl in two cases of hysterical convulsions since the one just described: one in a young girl of 16, and one in a married woman suffering with dysmenorrhœa, with like success.

Case II.—A negro man called at my office in the early part of March to be treated for a case of chronic chills, of the tertian type, which he contracted while working upon the Eastern Shore of Maryland, last fall. As the chill was expected the next morning, I told the patient to go home and send for me on the first symptoms of its coming. When I was called I found the patient with a shaking ague, with ashen hue of skin, feeble pulse, great irritability of the stomach, constant retching. I gave him five drops of nitrite of amyl by inhalation. In a few seconds the ashy hue of the skin disappeared, vomiting ceased, reaction was complete, with very little fever; in two hours from the time I first saw the patient he was out of bed, and by the liberal use of quinine and iron the patient had no more chills.

Case III.—Capt. H. called at my office to be treated for a whitlow involving the first and second joints of the middle finger. Dreading the operation of laying open the finger with a knife, the captain suggested the use of chloroform, which he had taken for two or three minor operations, while in the army, without any bad result. I sent for ℥i of Squibb's chloroform, and, pouring two or three drachms upon his handkerchief, directed him to inhale it, at the same time directing him to elevate his hand, intending, so soon as the hand dropped, to lay open the finger. As the hand dropped, I noticed that the patient was of a deathly pallor, and had ceased breathing; opening his mouth and drawing the tongue forward with a tenaculum, I immediately applied five drops of the nitrite of amyl to the nose and mouth. To my delight, flushing of the face, with violent beating of the carotids, ensued, and the captain opened his eyes, wanted to know where he was, and consented to have his finger incised without the further use of chloroform.

TRANSLATIONS.

ON THE COMPARATIVE ANTISEPTIC EFFECT OF BENZOIC AND SALICYLIC ACIDS.—Prof. E. Salkowski, of Berlin (*Klin. Wochenschrift*, No. 22, 1875), has been making a series of researches with different disinfectants, and particularly with the two above mentioned. The result was markedly in favor of the benzoic acid, whose antiseptic properties were shown to be decidedly greater than those of salicylic acid. This result is quite opposed to that obtained by Kolbe in his recent but very well known researches. Prof. S. thinks the reason of this lies in the different qualities of benzoic acid used. Benzoic acid obtained from balsam has a quite different odor from that obtained from urine, and may, it is likely, have a different effect.

Whether or not this may be the reason, the fact of the superiority of benzoic to salicylic acid, as well as the superiority in cheapness of the former, renders its thorough trial very desirable.

X.

THE URINE OF NEW-BORN INFANTS (Martin, Rye, and Biedermann: *Centralblatt für Med. Wissenschaften*, No. 24, 1875).—From examinations of the urine of seventeen male children during the first ten days of life, the following conclusions were arrived at:

1. The first discharge of urine is very rarely immediately after birth; is usually at the end of the first day of life, often not until the second or third.

2. The average quantity of the first evacuation of urine is eight cubic centimetres.

3. During the next ten days the amounts of urine discharged are not constant, varying from twelve to sixty-one cubic centimetres.

4. The color of the fluid on the first day corresponds to Nos. 1 and 2 of Vogel's scale; on the later days the urine becomes gradually almost as light as water.

5. The reaction is almost always moderately acid; very rarely neutral; for if not acid it has usually a marked tendency to alkalinity.

6. The specific gravity of the first urine averaged 1010.5.

7. The specific gravity during the entire ten days varied from 1002.7 to 1010.0.

8. In the urine of each of the children albumen was noticed upon one or more days.

9. Chlorides were found in all the evacuations.

10. The average amount of urea was 0.321 per cent.

11. Uric acid was constantly present in the first urine, and increased in quantity until the third day, when a diminution took place.

12. Under the microscope, the urine of the first day and that of the following days until the fourth was found to contain epithelium from the urinary tract in large amount, varying quantities of epithelium from the uriniferous tubules, and masses of uric acid crystals.

W. A.

LEAD COLIC TREATED BY LARGE ENEMATA OF WATER.—Dr. Reisland gives the following case in the *Berliner Klinische Wochenschrift*, No. 21, 1875. He was called to see a man 50 years of age, whose occupation had exposed him for some years to lead-fumes. The patient had suffered for some weeks from pain in the abdomen, with obstinate constipation, accompanied during the few previous days by occasional vomiting. Enemata of various kinds which had formerly emptied the bowels had latterly failed to give relief; ol. ricini in large doses had also been unavailing. The condition of the patient at the time Dr. R. first saw him was almost that of collapse, with frequent general spasm and muscular contractions, particularly of the arms and legs; accompanied by retching and vomiting of bilious matters. His face was pale, grayish-white in color, a distinct lead line could be seen on the gums, the tongue was foul. The abdomen was hard, tense, and somewhat retracted; pain extending to the small of the back, the testicles, and the thighs. Pulse 65, small. Temperature normal. The patient was ordered the following:

℞ Ol. croton., gtt. iii.
Ft. in pil. no. xv.

Sig.—Two every half-hour.

In addition, opium in half-grain doses every two hours. In the afternoon, in spite of having taken all the pills and four doses of opium, no relief had been obtained. It was then decided to use large enemata, and for this purpose an irrigator was made use of which would contain about a litre (two pints), having attached to it a yard of rubber tubing and a nozzle of hard rubber.

The irrigator was filled with lukewarm water, the patient took the knee-elbow position, and the nozzle was introduced a finger's-length into the rectum. When the irrigator was raised, the water passed into the intestine in a continual stream; before the irrigator was empty, more water was added, until four and a half litres had been introduced. The patient complained of severe pain, and the injection was then stopped. A few moments after, a partial stool was obtained; then further enemata were given, and the bowels were thoroughly emptied. This procedure was repeated daily for several days, by which time all pain, etc., had disappeared, and the stools were normal. X.

FOREIGN BODY IN THE RECTUM.—Dr. Greinblatt communicates the following case to the *Wiener Med. Presse*, June 20.

He was consulted by a man who gave the following history. Four days previously he had indulged in an unusually large meal without suffering any immediate evil results. Forty-eight hours later, however, he was seized with pain in the stomach; a day later, difficulty in urinating and impossibility of defecation ensued, and the symptoms increased until he was forced to seek medical assistance. On examination, the abdominal region was found tense and tympanitic. The upper portion was resonant on percussion, the lower dull. The painful region was evidently in the rectum. Exploration in this locality showed an elongated foreign body lodged transversely in the rectum just above the internal sphincter. This was carefully turned endwise, and removed by the aid of forceps. Upon examination, it was found to be a portion of the rib of a lamb, nearly an inch in length, which had passed the œsophagus, cardia, pylorus, small and great intestine, only to become lodged in the rectum. Immediate relief followed its removal. X.

VERRUCA SENILIS (KERATOSIS PIGMENTOSA).—Under this designation J. Neumann describes (*Wien. Med. Presse*, No. 13, 1875) a skin-affection of old people, characterized by the appearance of numerous wart-like tumors particularly upon the back and breast, varying from rusty brown to deep black in color. The friction of the clothing sometimes produces excoriations and ulcerations in these tumors, which, under such circumstances, cause great annoyance. The tumors are formed by the stratified accumulation of epithelial cells on the smooth surface or upon a papillary base. Microscopically, the accumulated epidermis shows nothing abnormal; the atrophied rete Malpighi in its collections of pigment-cells, as well as the adventitia of the vessels, have become rounded masses, whose contents are formed of horny cells, masses of smegma, and lanugo hairs. The sebaceous glands are enlarged, filled with dried smegma, their openings stopped up or atrophied. They project like warty pale-red growths.

Verruca senilis is distinguished from ordinary verruca in that the epidermoid character is more prominent, the papillæ taking no part in the growth itself, for which reason the name keratosis pigmentosa is suggested. Sapo viridis, pencilling with iodized glycerin or with dilute carbolic acid, may be used to bring about atrophy. A shorter method is the use of "Daniel's spoon."—*Berliner Klin. Wochens.*, No. 21, 1875.

X.

ALEPPO EVIL.—This affection, known under various synonyms, has long been supposed to be a specific affection, localized in the East, and particularly in and about the city from which its name is derived. Recently, however, an enterprising German, Dr. Geber, assistant to Prof. Hebra, established himself in Aleppo, and set up a skin-dispensary chiefly for the purpose of studying this affection. His conclusion (published in the *Vierteljahreschrift f. Derm. u. Syphilis*, 1874, 4tes Heft), after a large experience, is that all the forms of Aleppo evil are simply varieties of syphilis. X.

SALICYLIC ACID IN DIPHTHERITIS.—Dr. Hanow writes to the *Berliner Klin. Wochenschrift*, No. 20, 1875, praising very highly the valuable qualities of this remedy in the above disease. He uses the acid in solution, one part to three hundred, as a gargle, or in the stronger solution which is made by the addition of phosphate of sodium. The gargle is used hourly, and in the cases under Dr. H.'s care relief was obtained very shortly. After the third or fourth dose the membrane began to separate, and with the diminishing of the exudation the fever began to disappear, convalescence setting in after twelve hours. X.

ABLATION OF PEDICULATED TUMORS OF THE SKIN BY THE GALVANO-CAUSTIC.—Amussat (fils) recommends this procedure, having had successful results in seven cases, comprising papilloma, lipoma, fibroma, and condyloma acuminata (*Revue de Thérap. Méd. Chir.*, 1875, Nos. 2 and 3).

PHILADELPHIA
MEDICAL TIMES.
A WEEKLY JOURNAL OF
MEDICAL AND SURGICAL SCIENCE.

The Philadelphia Medical Times is an independent journal, devoted to no ends or interests whatever but those common to all who cultivate the science of medicine. Its columns are open to all those who wish to express their views on any subject coming within its legitimate sphere.

We invite contributions, reports of cases, notes and queries, medical news, and whatever may tend to increase the value of our pages.

All communications must bear the name of the sender (whether the name is to be published or not), and should be addressed to Editor Philadelphia Medical Times, care of the Publishers.

PUBLISHED EVERY SATURDAY BY
J. B. LIPPINCOTT & CO.,
715 and 717 Market St., Philadelphia, and 25 Bond St., New York.

SATURDAY, JULY 31, 1875.

EDITORIAL.

WICKER-WORK COFFINS.

ALLUSION has already been made in the columns of this journal to the idea of Mr. Seymour Haden, that the object of coffins should be to facilitate decay, not to retard it. As the law, dust to dust, ashes to ashes, is as unescapable as death itself, as even the highest perfection of the Egyptian art can but protract the return of the body to the great mother, earth, we confess that we sympathize with the belief of Mr. Haden, that it is better to assist than to attempt to defy nature. Leaden coffins, hermetically-sealed caskets, are, after all, but the devices of the undertaker to take advantage of human weaknesses. It is related of an old Scotch stone-cutter, that when asked how it was he always succeeded so well in selling expensive tombstones, he replied, "I talk to them till I see a tear in their ee, and then I strike." Led by undertaker and tombstone-maker, many a widow has expended upon the burial of her shattered hopes money that should have been garnered up for the living. The reform proposed by Mr. Haden is to do away with all temptation to undue expense.

Just here, some of our readers may desire to know who this Mr. Haden is. He is no ordinary man; indeed, according to our thinking, he is a very remarkable man,—a living reprobation of the time-honored but narrow and untrue belief that to be a successful doctor one must be a doctor and nothing else. Mr. Seymour Haden is widely known as a medical practitioner; but the chief glory and, no doubt, the chief joy of his life is that he is the "most original and accomplished etcher now alive in Great Britain."

The coffins advocated by Mr. Haden are to be of wicker; made with a strong, pliant osier,—a double thread being preferable,—with as wide meshes as is consistent with holding the flowers, ferns, mosses, evergreens, etc., in which the body is to be laid. In order to facilitate the recognition of the bones if it should ever happen to be desirable, an engraved leaden band is to be tied around the wrists, a second around the legs, and a third passed through the chest.

The procedures when death has occurred are as follows:

"As soon after death as may be, the body is to be sponged, the eyes are to be closed, the chin supported, the limbs composed, and the hands crossed upon the breast. Superfluous bedclothes, together with the impediments and rejectments of the sick-room, are to be removed, and a window is to be opened a few inches both at the top and at the bottom. The papers of the deceased may then be examined, and, if these contain nothing to forbid it, the first preparations for the funeral may be made in the following way. As part of the ordinary stock-in-trade of every turner, brush-maker, or basket-maker, will be found, nested one within the other, and of every form and dimensions, the necessary covering or coffin; at every herbalist's or florist's, its garniture. Both, being light and portable, may be delivered at the house in an hour or two, and the body may be at once laid in it and strewn (except the face and hands, which should be left exposed) with its evergreen covering. All this may be done by the nurses or older servants or members of the family, and no stranger need be admitted. There is now ample time to consider arrangements, for the visit of the physician or surgeon charged to verify the fact of death, to telegraph to friends, and to make final preparations for the interment. The morrow come, and everything prepared inside and out, the necessary agents for the interment will enter the house for the first time and the last, and remove the body in a suitable carriage, either by railway or by water, to its resting-place outside the city, one of the male representatives of the family in every case accompanying it. There will be no procession through the streets,—no opportunity for display,—nothing to elicit either the sympathy or the criticism of the neighborhood (both on such an occasion equally out of place); but, arrived at the cemetery, the body will wait in the mortuary chapel attached to it, with those who are to be present at its interment. These, having been informed of the death, will go and return as their desire, affections, or respect for the dead impel them. The assembly will be in the chapel, and at the grave-side only, where the mourners, men and women (for, since there is to be no public display, both may go), will find the trellissed coffin on its bier, garnished and beautified by

loving hands, awaiting them. Not a word of our burial service will be omitted, though more may be said in the chapel and less at the grave-side, and then all will be over. There will be no reunion at the house of death. The conventional feast will not be spread. The formal reading of the will will be at the office of the legal adviser of the family on a day appointed for the purpose; and the inmates of the house of mourning will return to it and be allowed to remain undisturbed. Next day every one will to his business."

The care of Mr. Haden does not stop with the burial. Where there is a deep, loamy soil, with a gravel substratum, natural grave-yards may be employed, but in most large cities he thinks artificial cemeteries are to be preferred. A series of experiments should first be made to determine what form of soil will most facilitate rapid decay. It will probably be found that an earth composed of fine carbon soil, sand, and lime, is the best; but, whatever compound is decided upon, an artificial soil of about twelve feet in depth forms a basis of this model grave-yard.

So far as this country is concerned, the artificial cemetery is certainly an absurdity,—the expense of making it and the comparative cheapness of land being insuperable objections. Mr. Haden's coffins may possibly come into use; certainly his method is better than cremation, in that it is not only less expensive, but is infinitely less repulsive to the overpowering instincts generated in the Anglo-Saxon breast by custom and teaching immemorial.

Indeed, prejudice is so strong, class interests so powerful, that had not Mr. Haden unexpectedly secured the eager aid and patronage of the Duke of Sutherland, his propositions would have been, even for England, as wild beating of the air as have been all the efforts to introduce cremation.

The duke appears to be an enthusiastic amateur philanthropist, and, being placed above absolute want by his inherited estates and by his marriage, has plenty of leisure for whatever he undertakes. Moreover, as he holds by his own right in the county of Sutherland 1,176,343 acres of land, and in the name of his wife 149,879 acres in the adjoining county of Ross, he is not without influence in a country like England, "in which the possession of land gives a factitious importance even to the humblest and poorest possessor such as no amount of stocks and shares and bankers' balances can ever give." On the 17th and 19th of June the duke gave what may be termed coffin receptions at Stafford House. All London was invited, and all London was there,—some to see the duke set in a framework of coffins, some to see Stafford House, some to see the crowd, and a few to see the coffins. Flirting among the coffins, if not "the ruling passion strong in death," was something akin thereto. Altogether, we conceive that West End London has had a new sensation, which certainly is a thing for which many *blasés* ought to be thankful, and Mr. Haden has had an advertisement among the wealthy and the titled, which ought also to be a cause of thankfulness—at least to him.

We have received the *New Orleans Picayune*, detailing a meeting of the New Orleans Medical Protective Association. At this meeting all the members agreed that they would not make contracts of service with any associations. It appears that there are in the city a number of what seem to be mutual benefit associations, and that it has been the custom for physicians to agree to serve them by the year at "five, ten, and twelve cents" a visit, as the case might be. At the meeting it was announced that all the holders of such positions had tendered their resignations. If the profession keep together, no doubt the practice of contracting with associations will be done away with. Probably this is the best solution of the question; but we have often wondered whether it would be possible to regulate, by a stern professional law, the "contract system" without abandoning it. It certainly would be better for an impecunious doctor to attend at fifty cents a visit by contract than at $0.00 without contract.

The Royal English Commission appointed to consider the subject of vivisection is composed of Lord Cardwell, Lord Winmarleigh, Mr. Forster, Sir John Karslake, Mr. Erichsen, Prof. Huxley, and Mr. Hutton. The London *Lancet* says of them, "Those who, like ourselves, desire to see the subject calmly and dispassionately considered from all points of view will regard these names as a guarantee that such will be done."

Mr. Hutton has taken an active part against vivisection, but is said to be a well-meaning, candid man, and Prof. Huxley is certainly no less committed in favor of vivisection.

Remarkable Succession of Breech-Presentations.—Dr. Nourse (*Clinic*) relates the case of a lady aged forty-three—married twenty-five years—had eleven children, all being breech-presentations. Mother was a healthy woman, medium height, with a well-developed pelvis. Children were also well developed, of fair size, and with heads of the usual size. The only peculiarity of the labors was the regular recurrence of the exceptional presentation.—*Detroit Review of Medicine and Pharmacy.*

CORRESPONDENCE.

BALTIMORE, July, 1875.

TO THE EDITOR OF THE PHILADELPHIA MEDICAL TIMES:

DEAR SIR,—The medical societies have adjourned until September; the colleges are making additions to their hospitals, and otherwise preparing for the fall campaign; Prof. Gilman has gone to Europe, and expects to bring back some famous men to fill chairs in the Hopkins University; the Hopkins Hospital still shows no signs of life; and the whole city, sweltering in the midsummer heat, enjoys the hydro-sulphuretted odors of the basin and the balmy breezes from the Falls.

The infant mortality here has been excessive. One week, out of 269 deaths, 168 were under five years, and about 90 of these were returned as from cholera infantum.

I was quite interested in an article in a late number of the *Times*, from Dr. Comegys, on summer-complaint. Cholera infantum is considered by many of our physicians as a heat-fever. The nervous system of the child, being very delicate, feels the full force of the extreme heat, and the vomiting and purging are only evidences of disordered nervous action, and not indicating inflammation of the stomach and bowels. Two forms of the disease are recognized,—the congestive and the syncopal. The former is the most dangerous, and requires the copious use of cold water externally and quinine internally. The syncopal requires quinine and stimulants, given in small and frequent doses. After the urgent symptoms have passed, bismuth may be used should the diarrhœa persist, but I have seen many cases, apparently dangerous, promptly relieved by quiniæ tannas, gr. $\frac{1}{3}$–j; elix. valerian. ammon. (not Hubbell's), gtt. v–xx, every two hours. I think the success with this mode of treatment is greater than with the old calomel, chalk, and astringents. Of course, the large majority of our physicians adhere to the entero-colitis pathology, and treat accordingly.

I was pleased to see a paragraph that old Jeff. had purchased ground adjoining the college building for the purpose of erecting a hospital thereon. As I am an alumnus of that school, I earnestly desire its prosperity.

Here we have three schools.

The University of Maryland has a small but well-managed hospital under its control, to which it has just added a new wing, about 30 by 90 feet, and three stories high. The professors are Drs. N. R. Smith, Chisolm, Johnston, Donaldson, Chew, McSherry, W. T. Howard, Tiffany, Miltenberger, Miles, and Aiken.

The Washington University has also been making some additions to its hospital. This building, situated near the centre of the city, gets nearly all the accident cases, and thus its wards are generally well filled. Drs. J. F. Monmonier, Arnold, Lindsay, Trist, Scott, Clagett, Green, and J. N. Monmonier are professors.

The College of Physicians and Surgeons has established a lying-in hospital, which is in a flourishing condition, and fills a want long felt in this city. The professors are Drs. Lynch, Erich, Brown, Latimer, E. L. Howard, Atkinson, Friedenwald, Bevan, Opie, and Goolrick. The other hospitals of the city are, Hebrew, St. Agnes's, St. Joseph's, Church Home, Union Protestant Infirmary, Bayview Asylum, and Mount Hope.

We have ten dispensaries, which do much good and much harm. It is impossible to prevent persons able to pay for medical services from receiving aid from our charitable institutions; and, like all other cities, we are educating a class of permanent paupers.

Some time since, I wrote that our city enjoyed the blessings of the night-cart. I am happy to say that the above statement is no longer true. The firmness of the mayor and our efficient commissioner of health, Dr. James Stewart, has given us what we never had before,—a summer free from the noise and stink of the sink-cleaning brigade. The odorless apparatus has free control, and gives general satisfaction to the citizens. Our city council showed its appreciation of the voting capability of the night-force by repealing the ordinance which gave us relief; but the mayor vetoed it. Our council deserves no credit for enacting this ordinance, as it was done under compulsion. Baltimore County was tired of the nuisance, and gave the city notice that unless it was stopped injunctions would be applied for. So, for a few months at least, we are free.

Yours, etc.,

MEDICUS.

PROCEEDINGS OF SOCIETIES.

PATHOLOGICAL SOCIETY OF PHILADELPHIA.

THURSDAY EVENING, MAY 27, 1875.

THE PRESIDENT, DR. WM. PEPPER, in the chair.

Kidney from a case of hæmaturia in an infant.

DR. JOS. G. RICHARDSON presented the specimen, showing a curious natural injection of both the convoluted and straight portions of the uriniferous tubules with blood-casts, and remarked that the organ had been sent to him by Dr. M. B. Wright, of Cincinnati, Ohio, for microscopical examination; the case being one in which supposed pigment-flakes were found in the urine, and, he believed, also in the blood.

Dr. Wright was preparing a paper in relation to a series of these cases which had occurred in his hospital wards, for the forthcoming volume of the Transactions of the American Medical Association, but had kindly permitted the exhibition of this specimen, and furnished the following brief history of this and similar examples of the disease:

"In three or four days, or longer, after birth, a dingy appearance of the (child's) surface is observed. A curdy exudation is scattered over the mouth, the urine becomes dark, and soon a black sediment, in more or less quantity, is observed on the napkins. Some of the little patients have died within twenty-four hours, others have lived several days, and a few have recovered. The urine has been carefully examined chemically, with negative results merely."

Dr. RICHARDSON exhibited under the microscope a thin section cut in the axis of one of the pyramids of

the kidney, and stated that by tinting the contents of tubules, in similar preparations, with aniline or iodine (according to his method for the diagnosis of blood-stains), he had been able to demonstrate, and even accurately measure, the red blood-corpuscles of which they were composed.

Biliary calculi impacted in the left branch of the hepatic duct, attended with numerous cystic formations in the corresponding lobe of the liver.

Dr. R. M. BERTOLET presented the specimen, and furnished the following history:

"The specimens were obtained at the obduction of J. G., æt. 65, who was admitted into the Philadelphia Hospital in a semi-comatose condition upon May 20, 1875. No previous history of the case was obtainable; death ensuing in less than twenty-four hours. The clinical records are also very unsatisfactory. There was noted a moderate jaundice; high temperature; hurried respiration; hypostatic dulness, and vomiting.

"*Autopsy.*—The lungs were œdematous; bronchi filled with a frothy serum; heart slightly enlarged; the left ventricle hypertrophied; semilunar valves thickened; aorta atheromatous. The stomach presented several small patches of erosion and ulceration of the mucosa. Towards the pylorus the serous membrane was intensely injected, and had formed slight adhesions to the hepatic organ. The mesentery and the serosa covering the small intestines were likewise, at points, strongly injected, with here and there ecchymotic blotches. A very small quantity of flocculent serum was found in the abdominal cavity. There were no intestinal ulcerations. The spleen was flaccid, reduced to a soft, almost pulpy, mass, somewhat reduced in size. Kidneys were enlarged, soft, with cortical cloudy swelling of the convoluted tubules; the capsule separating very readily.

"The liver was of normal size, very much softened, with a slightly roughened capsule. In the left lobe a number of cysts were seen bulging above the level of the convex surface. Upon removing the viscus, one of these thin-walled cysts was ruptured, and a quantity of yellowish, creamy matter escaped into the abdominal cavity. Probably a similar escape of pus took place during life, thus giving rise to the slight peritoneal inflammation. Examining the liver more minutely, it is seen that the left lobe throughout presents numerous cystic patches, which communicate with one another. These cysts vary in size from a small pea to that of an almond. They are filled with thick, yellowish, turbid fluid, often mingled with numerous small, black and ochre-colored concretions. In the transverse fissure of the liver two cylindrical-shaped biliary calculi, each about the size of a marble, were felt completely occluding the left branch of the hepatic duct. When first removed, the outer layers of these concretions appeared soft and crumbly; the interior nucleus being much firmer in consistence and darker in color. There was decided thickening of the walls of the left branch of the hepatic duct; while at the same time the surrounding connective tissue was hypertrophied to such a degree as firmly to bind down these two calculi in their position in the hepatic duct. The index-finger could be readily inserted into this portion of the biliary tube after removal of the calculi. Immediately beyond the point of constriction ampullar-like dilatations began to be developed, attaining their maximum size, however, in the ultimate twigs of the biliary ducts towards the periphery of the organ, where the least resistance presented itself; there forming the numerous cystic distentions seen strewn over the entire left lobe.

"The gall-bladder was filled with a thin, yellowish secretion, free from concretions. The ductus communis choledochus, as well as the cystic and hepatic duct, excepting its left branch, were found to be freely pervious.

"That these cysts, so closely resembling in appearance multiple hepatic abscess, are the resultant of the obstructions in the hepatic duct, is evident from the fact that they contain a greater or less number of small biliary concretions, and that their walls at points still present the remnants of a columnar epithelial lining. Further proof of such an origin is afforded, should any be required, in the microscopical appearances presented by the hepatic parenchyma even at a considerable distance from the cysts.

"The ultimate radicles of the bile-ducts are microscopically seen to be filled, at a few points actually dilated, with a fine granular biliary coloring matter. Often entire meshes are formed by these blackish lines of pigment in the biliary capillaries, each enclosing a single liver-cell; so that we have before us the finest picture of a natural injection of the gall-capillaries, excelling by far the famous Chronszczewsky artificial preparations. This pigment-matter marks not only the periphery of each lobule, but extends into the very centre of the acini; and here and there are also found single large fragments of gall-pigment lying between the hepatic cells. The latter are undergoing atrophic changes and disappear under the encroachments of the cysts. The hepatic cells in this specimen are unquestionably undergoing fatty degeneration, nor do I believe that this condition is entirely attributable to post-mortem changes, as Heinrich Mayer* claims. This experimenter succeeded in filling the biliary radicles with granular pigment, by ligating the ductus choledochus of various animals, but states that gall-stasis is not attended with fatty degeneration.

"Leyden,† on the other hand, concludes from his experiments that fatty infiltration of the hepatic cells does occur, which eventually leads to the atrophy changes.

"Wyss also noted the same phenomena where the hepatic duct had become closed by a carcinomatous nodule. It will be seen without further citation that there is a certain amount of conflicting evidence as to the processes which cause the dissolution of the secreting parenchyma, and I desire to place this case on record as one attended with decided fatty infiltration. It is generally admitted that the disappearance of the hepatic cells is not due to any solvent action of the retained biliary secretion itself.

"Without going into minute details, I can fully confirm the statement of Mayer, that the protracted stasis of gall causes an increase of the connective tissue of the liver, not only around the blood- and biliary vessels, but also in the centre of the lobule, where the sustentacular substance is increased to such an extent as to push the secreting cells asunder.

"The presence of calculi in the hepatic duct is an extremely rare occurrence. But a comparatively limited number are recorded, and of these many were kept back by the simultaneous filling of the common duct with calculi. Although in this specimen we find the concretions firmly clasped in position, yet upon their removal the biliary duct is not stenosed, and it is a difficult matter to explain, in the absence of new growths or other obstructions, how they came to be retained in this site, where the tube is decidedly much wider than any of its branches. No account seems to have been hitherto taken of the part that is probably played by the numerous blind ramifications in the transverse fissure of the bile-duct, now generally designated by histologists as *vasa aberrantia*.

"These receptacles for bile, which are quite numer-

* Wiener Med. Jahrb., 1872.
† Beiträge zur Pathologie des Icterus, 1866.

ous around the hepatic duct, may, in a yet undetermined manner, account for the arrestation of calculi in this site. Biliary cysts due to mechanical obstruction and stenosis of other portions of the gall-duct have been frequently recorded, and they seem to be often met with in sheep afflicted with distoma hepaticum. Rupture and escape of the cystic contents into the peritoneal cavity occasionally happen. The clinical picture presented by these cases is not yet as sharply delineated as desirable, and I regret that this well-marked case does not enable us to learn anything in this respect."

Medullary carcinoma of the left ovary.

Dr. J. EWING MEARS presented the specimen for Dr. W. W. KEEN, who furnished the following history:

"Mrs. A. S., æt. 46, of West Chester, was sent to me May 1, 1875, by Dr. McClurg. She began to menstruate at 15, and ceased at 44; was always regular, and did not usually suffer much pain. Married at 19, and her only child was born one year later. Has never had any uterine trouble. Her general health has been good until within two years. She first observed a swelling just above the right groin, about two years and a half ago, but it was not painful. In September last, after lifting a heavy basket, she observed that it had changed its place to the middle line. She had at that time considerable abdominal pain, and was sick some three or four weeks, but was not in bed. In October last, Dr. McClurg tapped her and removed five gallons of a greenish, viscid fluid, the operation being followed by considerable peritonitis. Her health was better after she was tapped, but the abdominal swelling again increased considerably. Of late she had not suffered much pain, but, from general discomfort, life was becoming a burden.

"May 1, 1875.—On examination, she is seen to be a thin, spare woman. Her abdomen measures, from the ensiform cartilage to the umbilicus, six inches; thence to the pubes, nine inches; between the iliac spines, sixteen inches; and the greatest abdominal girth, a little below the umbilicus, is thirty-three inches. The swelling is almost wholly below the umbilicus. A considerable amount of ascites is readily recognizable, beneath which the tumor is distinctly felt. The anterior parietal adhesions are limited to two irregular spots of about three inches square, the one surrounding the point of tapping, the other below it, and corresponding to a hard mass. The ascitic fluid flows around these adhesions, and reveals them easily. No adhesions existed laterally to the abdominal walls. The whole mass was, however, movable with difficulty either from side to side, or from below upwards. Palpation showed that the upper part of the tumor was distinctly cystic; the lower part, however, was solid. Anteriorly there extended from the pubes, obliquely to the right, a mass feeling somewhat like an elongated, irregular uterus; but the later examination of the uterus made it very doubtful that this was the uterus.

"The vaginal examination showed the os and cervix in about their normal position, size, and relations. The tumor could be felt behind the womb, but the cervix did not fade into the tumor, for a depression existed between them. The sound entered the uterine cavity upward, and somewhat to the right, two and a half inches.

"The uterus was scarcely movable at all independently, and movement of the tumor communicated motion to the uterus. The tumor could also be felt by the rectum, and its general pelvic examination left no doubt that the pedicle was very short and the adhesions probably pretty firm, but not very extensive.

"May 20.—By the aspirator I drew off a small quantity of the fluid for examination. I punctured the cyst through the adhesions, so as to avoid the peritoneal cavity. The fluid was purulent-looking, and showed on examination some compound granular corpuscles and a few blood- and pus-cells; but the morphological element was mainly the distinct ovarian cell.

"May 22.—The tumor was removed at St. Mary's Hospital, in the presence and with the assistance of my colleagues, Drs. Grove, Schell, and Mears, and Drs. McClurg, Stewart, Porter, Griffith, with several others. After tapping the main cyst I found that the lower mass was too solid for any further diminution in size, and my incision had to be extended from the umbilicus six and a half inches downwards nearly to the pubes, to admit of its removal. The parietal adhesions were easily broken up; a few were found above and behind, to the intestine and omentum, and the mass was then turned out of the abdominal cavity. It was so large and solid that it hid everything below its mass, and I was obliged to tie its large base with a stout ligature, and then remove the greater part of the tumor at once, by cutting through its substance. Having done so, the base of the tumor (for it could not be called a pedicle) was found to be attached directly to the uterus, the rectum, and the left side of the pelvis. The parts of the tumor which had been left were now removed. Three large stout ligatures were passed around the broad attachments, two at the uterine and one at the pelvic attachments. These secured some large vessels. Considerable trouble was caused by these vessels and numerous smaller ones, so that eight ordinary ligatures were required. These were cut off short, but the three large ones were brought out of the abdominal wound. The attachments were touched with Monsel's solution, and the wound was closed by eight silver-wire sutures. The operation lasted two hours.

"The tumor consisted in its upper portion of one large cyst, containing about four pints of fluid like that before described, besides two or three quite small cysts. The inner surface of the large cyst was coated with soft, almost grumous papillary growths, numerous detached masses of which made up a sediment in the fluid. The lower part was quite a hard solid mass, divided by distinct septa of connective tissue into smaller masses, which could be peeled out of their loculi. These smaller masses were whitish in color, and again subdivided into still smaller similar masses.

"She was placed in bed with some hot-water bottles, though she was not very cold, and one-fourth grain of morphia was given hypodermically. In a short time she became conscious, and reacted well, though vomiting occurred occasionally. Nothing was given for three hours, but then beef-tea and milk-punch in small quantities were given every hour. Her pulse in the evening was 124, and temperature 101.2°. Another one-fourth grain of morphia was given to produce sleep. She suffered no pain.

"May 23.—In the morning her pulse was 126; temperature 100.8°. She had not slept any, had rejected the beef-tea utterly, but retained the punch. There was no pain, but the belly was a little tender. She passed a small quantity of water. Her general condition was much depressed. I continued the punch and ordered broken ice and a cup of iced tea.

"In the evening her pulse was 144, and very weak; her temperature 101.8°; her belly tender. A little oozing of bloody serum had taken place during the day. She was bathed in perspiration, was restless and despondent. From this time she gradually sank more and more, and died at 8 A.M. the next morning, May 24.

"*Autopsy*, May 24, at noon. The wound was well united throughout, except where the ligatures emerged. At each ligature there was a little pus. The intestines were all glued together with lymph of recent formation below the level of the umbilicus. At this level the omentum was attached to the belly-wall transversely,

and divided the main peritoneal cavity into two parts. In the upper the evidences of old inflammation and its resulting adhesions were seen; in the lower the recent inflammatory changes, the results of the presence of the tumor and the operation. No hemorrhage had occurred after operation.

"The uterus and right ovary were removed, with a portion of the rectum. The tumor was found to have been attached to nearly the whole of the left half of the uterus laterally and posteriorly, and to the rectum in Douglas's cul-de-sac. From this rectal attachment and deep on the posterior surface of the uterus the troublesome hemorrhage had taken place, and also from the pelvic attachment of the left broad ligament, which was the pelvic attachment. The right ovary was somewhat enlarged, and had contracted some adhesion to the pelvis.

"All the specimens are deposited in the Museum of the College of Physicians.

"Dr. J. G. Richardson kindly examined the specimens for me, and reports as follows:

"'Scraping the surface of a fresh incision into the ovarian tumor you left with me yielded an abundant milky juice, containing multitudes of rounded, oval, caudate, and multiangular cells, with large nuclei. Thin sections from the growth exhibited similar cells heaped together in the alveoli of a loose but rather abundant struma, the individual cell-elements being without intercellular substance. The tumor seems, therefore, to be a rather hard variety of encephaloid or medullary carcinoma.

"'The right ovary contained a dark-brown fluid, in which compound granular corpuscles, plates of cholesterine, and "Drysdale's ovarian cells" were abundant. Its internal wall, on incision, displayed a peculiar plicated arrangement, strikingly analogous to that of the *corpus luteum* of pregnancy.'"

Dr. MEARS said he had examined the fluid and did not find in it the so-called ovarian cell in such numbers as Dr. Keen. He thought he had at times been able to diagnosticate cancer of the ovary by examination of fluid drawn from the abdomen. In this case, however, he was unable to do so, but had concluded that this was a multilocular cyst, in which suppuration had occurred. The discovery by Dr. Keen of the so-called ovarian cell in such large quantities in the fluid derived from this case by tapping, would seem to deprive this cell of its pathognomonic character, since the specimen is pronounced by Dr. Richardson to be a true medullary cancer.

Dr. BERTOLET said that he would refrain from saying anything about the so-called "ovarian cell," as being a matter still held *sub judice* by a special committee of this Society, but he thought that, as a scientific body, it was wellnigh time that we should drop allusions to and discussions about "cancer-cells," of which such frequent mention had been made. Cancerous tumors could not be diagnosticated by simply examining the juices or rough scrapings, but could only be recognized by careful section and examination of the cells in relation to the stroma. The mere presence of a greatly and variously altered epithelium did not suffice to distinguish a carcinomatous growth from a benign adenoma; and many other species of tumors, like a simple retention-cyst, may present us with as many varied forms of cell-growth. The alveolated connective-tissue stroma is as important a factor as the "epithelial" element; either one, without the other, can never constitute a carcinoma. "Cancer-cells" are things of the past, and by us, also, should be irretrievably consigned to oblivion.

Dr. MEARS said he would like to ask Dr. Bertolet whether or not it was possible to diagnosticate cancer by examination of products obtainable during life.

Dr. BERTOLET replied that it was formerly alleged that cancer of the kidney could be determined by the presence in the urinary sediment of cells derived from the débris of the breaking-down growth. These various forms of cells—atypical epithelium—have now been abandoned as worthless for the diagnosis of renal cancer. Occasionally, it is true, fragments are discharged so large as to permit the recognition of an *alveolar structure*, when teased or cut in thin sections; but very often even such fragments are so far advanced in the necrobiotic process as to preclude such a recognition.

Dr. MEARS said he could recall at least one instance in which he had examined the fluid drawn from the abdomen and concluded that the case was one of cancer of the ovary. He was present at the operation, and presented the tumor to this Society. The specimen was referred to the Committee on Morbid Growths, and reported by them to be one of cancer. He was not as yet a believer in the existence of pathognomonic ovarian cell, and in the discussions in this Society he had expressed his disbelief in the existence of a distinctive cancer-cell. He fully recognized that the only proper method to determine the character of growths was to examine them in section, in order to study the relation of the cells to the stroma, but he felt sure that he had at times observed differences in the fluids in cases of ovarian disease which caused him to declare that the growth was not an ordinary cyst of the ovary, but a cancer.

Dr. JOHN ASHHURST, Jr., said that he thought that in our zeal for modern methods of investigation (the excellence of which no one could be more ready to admit than himself) we should not overlook the circumstance that cancer had, as a matter of fact, been frequently recognized in past years by the examination of scrapings, or of the so-called "cancer-juice," and that the investigations of Paget and other eminent pathologists had been almost entirely conducted in this way. While no one at the present day probably believed that there was any definite "cancer-cell," yet he thought the existence in any particular specimen of a great variety of cells of different sizes and characters, and of multifarious shapes, furnished probable, though not certain, evidence of the presence of cancer. It must be remembered, too, that even with the modern method of examining thin sections it was not always possible, without repeated examinations, to determine whether a given growth was of a carcinomatous or a sarcomatous nature, the same tumor, perhaps, presenting in most parts cells in constant relation with an intercellular substance (sarcoma), and yet, in certain places, nests of cells without any intercellular substance, when the growth would have to be called a *carcinomatous sarcoma*. Hence, while fully agreeing with Dr. Bertolet as to the superiority of the modern mode of studying the minute anatomy of tumors, he thought that, nevertheless, some information of practical value might be gained by examining scrapings or expressed fluid, and that it was not at all unreasonable, therefore, to suppose that a microscopic examination of the liquid removed by tapping might afford ground for a probable, though doubtless not a positive, diagnosis of cancer.

Dr. JOSEPH G. RICHARDSON said that he had now in his possession specimens of the discharge from a case of tumor under the jaw showing characteristic pearly globules by which he was enabled to make a diagnosis of epithelioma, without any examination of sections from the growth.

Dr. JAMES TYSON said he had recently more than once stated that in our modern methods of study of morbid growths he feared that the cell itself was being too much overlooked. Certainly no one would accuse him of claiming the existence of a specific cancer-cell; but at the same time, having had some experience in the older

methods of scraping and dissecting, as well as the more modern of hardening, staining, and section, he felt that there were certain peculiarities of the cells of cancerous growths considered *in toto*, the presence of which alone justified more or less suspicion of malignancy, in a clinical aspect, at least. These characters had been well described by his friend Dr. Ashhurst, and need not therefore be repeated. To those named might also be added the large numbers of nuclei, and the large size of the nuclei in relation to that of the cells themselves. Dr. T. did not wish, however, to be considered as advocating a study of the cells only, in making the diagnosis of cancer, but thought that both methods should be combined.

With regard to cancer of the kidney, he had to say that in a very large number of examinations of urinary sediment from cases of suspected cancer, and in some of which cancer was found to exist after death, he had never met any cellular or other elements whence the presence of this disease could be suspected. At the same time, he thought it not impossible that, in the disintegration of the organ, portions might descend to the bladder, which would aid or confirm a diagnosis, and he saw no reason to doubt the accuracy of observation by such observers as Beale, Hoffmann and Ultzmann, and others bearing on this point.

Dr. RICHARDSON thought it might at least be said that while the cellular elements in normal tissues grow according to a law of uniformity, those lying closely apposed resembling each other so long as constituting the same tissue, the cells of cancer grow in a *lawless* and irregular manner, resembling those of various other tissues as well as those in which they happen to be seated.*

Dr. BERTOLET thought that if Dr. Ashhurst were to have plunged his trocar into the cavity of the tumor of the breast which had been this evening reported by the Committee on Morbid Growths as a cysto-sarcoma, he would have drawn out many epithelial elements, while the chief mass is in reality a sarcoma. In fact, the contents of the large cyst had been examined microscopically, but were found to be mostly epithelium, and so destitute of any characteristic features that no allusion to their appearance was deemed called for.

The PRESIDENT referred to the interesting question of the microscopic appearances in the urinary sediment in cases of cancer of the kidney. He had had the opportunity of carefully examining the urine in quite a number of such cases, and had found the results most uncertain. The great variety of form and size of the cell-elements derived from the epithelial lining of the urinary passages (perhaps especially from the bas-fond of the bladder) simulate at times the cell-forms of carcinoma, and on several occasions when the autopsy showed merely pyelitis, suspicion of cancer of the kidney had been aroused in this manner. On the other hand, in cases of undoubted renal carcinoma the microscopic study of the urinary sediment gave entirely negative results.

It would seem as though much of this discussion turned upon the precise classification adopted for tumors and neoplasms. It is of course well known that this has varied much at different times, and notably since the earlier writings of Paget. There can be no doubt that the latter observer and others of his school very frequently made a correct diagnosis of cancerous growths, so called under their classification, because the character of the expressed juice and particularly the cell-forms it contained formed an important feature in the characteristics of a cancer. But at the present time there exists an almost unanimous disposition to accept the classification of recent writers, in which cancer occupies a perfectly definite place, not in the least dependent on the character of juice that can be expressed from a cut surface, nor on the cell-forms present, but upon certain definite anatomical relations and arrangement of cells and intercellular stroma. According to this latter view it is, of course, necessary to employ the mode of examination which will alone afford a demonstration of these relations; and it is evidently impossible that a diagnosis can be made from the examination of fluid. It would seem that, with this conception of the question, the assertions made by Dr. Bertolet were well founded.

Vesical calculus of small size, producing marked symptoms.

Dr. JOHN ASHHURST, Jr., exhibited a vesical calculus, weighing less than two grains, removed by lateral lithotomy, from a boy, one week previously. The symptoms of stone in the bladder had existed only about three weeks, but had been unusually severe, several attacks of complete retention of urine having occurred, and the violent straining during one of these attacks having caused rupture of a blood-vessel in each orbit. The stone appeared to be of the uric acid variety, and there had been evidences of renal calculus before the development of vesical symptoms. Entire relief had been afforded by the operation.

GLEANINGS FROM OUR EXCHANGES.

SALIVARY CALCULUS IN THE PAROTID DUCT (*Edinburgh Medical Journal*, March, 1875).—Mr. Joseph Bell reports the case of a young lady, æt. 23, who for five months noticed a hard swelling in the left cheek, far back, nearly opposite the last molar tooth. There was not much pain except at times, when the tumor increased in size. There was much thickening of mucous membrane, and a constant discharge of pus into the mouth. There was also considerable fetor. The mucous membrane was red, swollen, and at one point a most malignant-looking fungous mass of granulations protruded. A gum-boil was supposed to have originated the mischief. Finding that all the pus came from one point, Mr. Bell passed in a fine grooved probe and succeeded in striking a hard mass at about the distance of an inch from the opening. Next day she was put under chloroform, and by slitting up Steno's duct to the distance of nearly an inch, it was found possible to dislodge and remove a pear-shaped salivary calculus, about the size of a hazel-nut. A very rapid recovery from all the symptoms ensued, and no deformity whatever remained.

TREATMENT OF ABSCESS OF BREAST BY COMPRESSED SPONGE (*New York Medical Journal*, June, 1875).—A patient had been suffering from mammary abscess for three weeks, but without any special benefit from treatment in checking the discharge of pus. It was decided to try the effect of compressed sponge, and for this purpose a sponge about ten inches in diameter was subjected to pressure and then applied by means of a bandage over the breast. After it had been in use forty-eight hours the abscess was completely cured. No pain was experienced by the patient, and in this case the opening in the breast was three inches above the de-

* [I have sometimes illustrated to my students the nature of this *lawless growth*, which I conceive to be so important a characteristic of the cells of cancer (as distinguished from Lebert's cancer-cell), by comparing it to that manifested in the development of the fungus producing the "smut" of our Indian corn. The relation held by the huge, distorted, ugly, and *lawlessly growing* diseased grains to healthy grains evenly ranged in a ripe ear of corn, is strikingly analogous to that subsisting between the large, deformed, and *lawlessly growing* cells of carcinoma, and the equal, symmetrical, and regularly arranged cellular elements of normal tissue, as, for example, the mammary gland, which the malignant tumor may invade.—J. G. R.].

pendent part of the abscess. In applying a sponge to the breast in this class of cases, it is found of advantage to compress it when dry. After it is applied to the breast and firmly secured in position, a little water is poured upon it to cause expansion and the necessary pressure.

CASE OF GONORRHŒAL OPHTHALMIA WITH PECULIAR FEATURES (*New Orleans Medical and Surgical Journal*, May, 1875).—Dr. V. Grima reports a case of gonorrhœal ophthalmia, which, after the duration of a week, suddenly got well, together with the gonorrhœa. At the same time both of his knees, his elbow-joints, and his wrists grew swollen and painful. This lasted about ten or twelve days, and then got well rather rapidly, when his eyes again became painful, and, on examination, he was found to have rheumatic iritis. He finally recovered entirely.

OVULATION WITHOUT MENSTRUATION (*Chicago Medical Journal*, June, 1875).—A lady, married at 25, became pregnant, and was delivered in about ten months. The child was nursed twelve months. After this the mother menstruated six times. Her second child was nursed five months, until the baby died. Since then a third and a fourth child have been born, and a fifth pregnancy is now going on, each child having been nursed twelve months, yet during the past six years she has not menstruated once.

SALICYLIC ACID IN CHRONIC CYSTITIS (*New York Medical Journal*, June, 1875).—In chronic cystitis the bladder has been washed out with a solution of salicylic acid, containing one part in five hundred of water. The method has been to make four injections of one ounce each, every morning and evening. The acid not only removed the disagreeable odor of the urine, but, in a short space of time, freed it from pus. In empyema, a solution of the same strength has been employed with very valuable results.

ARE THERE ANY MEANS BY WHICH THE SEXES CAN BE PRODUCED AT WILL? (*New Orleans Medical and Surgical Journal*, May, 1875.)—A series of observations were made by M. Thury, a French veterinary surgeon, with a view to discover, if possible, whether, and in what manner, the sexes could be produced at will in animals. The result arrived at was: that when the male had connection with the female in the beginning of heat in the female, the offspring were females; and when had towards the termination of heat, the result was a male. These results were published; and others who were engaged in raising animals pursued the same course of observations, and verified, by the results obtained, the truthfulness of the theory advanced by M. Thury from his observations. From observations made by medical men with regard to the development of sexes in the human subject, the result arrived at was that in a conception taking place at an early period after the menstrual flow had ceased, the product will be a female; and the farther removed from that period (always omitting four or five days anterior to the following monthly illness), the more likely is it that the child will be a male. We generally find that where there is a difference of fifteen years, more or less, between the ages of parents, with the father the elder of the two, the children are usually males; and this is accounted for on the ground that the father has not the same amount of desire as a younger man; some time usually elapses after the flow before copulation takes place.

CONVERSION OF BRUCIA INTO STRYCHNIA.—Two alkaloids—strychnine and brucine—occur in the various strychnos species. These, on superficial view apparently very dissimilar bodies, are, however, aside from their occurrence in the same species of plants, chemically very closely connected. By an inspection of their respective formulæ, it appears that by the assimilation of four atoms of oxygen and the separation of two molecules each of water and carbonic anhydride, brucine can be transformed into strychnine. This is effected by gently treating brucine with four or five times its weight of diluted nitric acid. After the effervescence of carbonic anhydride has ceased, the deep-red solution is concentrated, treated with potassium hydrate in excess, and shaken with ether. The ethereal solution, on spontaneous evaporation, yields a red-colored mass containing a red pigment, a yellow resin, and a base. By recrystallization, the latter was obtained in a pure state, and found, by its excessively bitter taste and all of the other characteristic reactions, to be strychnine. The transformation of brucine into strychnine is not only a remarkable fact in itself, but is also highly important in a toxicological view, as it again points out the great caution that must be exercised in such investigations where oxidizing agents are employed.—*T. L. Sonnenschein*, in *Pharm. Zeitung; Pharmacal Gazette*, July, 1875.

MISCELLANY.

THE FORM OF LIGHTNING-RODS.—Knowing that electricity at rest always tends to diffuse itself on the surface, in fact, that it always *confines* itself to the surface, it became at an early period a question whether electricity in motion did not follow the same law. Pouillet determined the question in a very ingenious manner. He took a cylindrical wire of a certain size, and measured the resistance which it offered to a current of electricity. He then rolled the wire out flat and measured the resistance again; it was found to be the same, although it is evident that the extent of the surface of the conductor was by this means greatly increased. Other experimenters have determined the question by different methods, but always with the same result. The committee of the French Academy, which included Becquerel, De la Rive, Pouillet, and others, adopted a solid square bar as the best form for lightning-rods; and Sir William Snow Harris, though often quoted as favoring rods which present a large surface, says, "Provided the *quantity* of metal be present, the form under which we place it is evidently of no consequence to its conducting powers, since it would be absurd to suppose that a mass of metal, under any form, did not conduct electricity in all its particles; indeed, we know that it does so."—*Prof. John Phin*, in *Popular Science Monthly* for August.

DR. EUGENE PENDLETON describes in the *Medical News* the case of the most unkillable man on record. He fell sheer 258 feet by actual measurement, and suffered only such trifling injuries as concussion of the brain, broken ribs, fracture of the radius, and dislocation of the humerus, downwards and backwards. About twenty-four hours afterwards, all symptoms of concussion passed off, but a severe attack of pneumonia followed, from which he made a good recovery, and is now as well as ever.

MEDICAL LEGISLATION.—The *Medical News*, in reply to the desire of the *New York Medical Record* to know "what our medical brethren of Pennsylvania have gained by this law," says,—

"When our cotemporary will inform us what protection lambs ever received from wolves, we will be enabled to gratify his desire for information.

"Lambs, guided by *instinct*, fly from the wolves, but medical men are supposed to be influenced by a higher faculty,—*reason*. This prompts some of the well-meaning but inexperienced among them to seek assistance from our political legislatures, and they obtain such protection as the poor frogs in the fable obtained when they prayed to Jupiter for a king to govern them: they got King Stork."

OF M. Démarquay, the noted Parisian surgeon, who recently died of cancer of the stomach, the Paris correspondent of the *British Medical Journal* says,—

"The name of Démarquay is familiar to the medical world, as he not only distinguished himself by his writings, which proved him to be a *savant* in the true sense of the word, but was also one of the ablest and most practical surgeons of the day. M. Démarquay was surgeon to the 'Maison Municipale de Santé,' more familiarly known as the Maison Dubois, where he had made himself very popular. He was far above political influences, which is a rare thing for a man of his position in France, so that he had none but friends in the ranks of all parties. This he showed during the siege of Paris, and subsequently during the Commune, when, as surgeon and one of the founders of the 'Ambulance de la Presse,' he rendered the most unreserved and signal service. M. Démarquay was a member of the Academy of Medicine, and, had he lived, would doubtless have one day taken his seat at the Institute. His professional services were rewarded by the State by promotion to the dignity of Commandant of the Legion of Honor. Born of poor parents, M. Démarquay died a millionaire. He was never married, and, consequently, bequeathed a portion of his large fortune to his poorer relations, and the remainder was distributed as follows: £4000 to the Paris School of Medicine for the foundation of an annual prize; £400 was reserved and made over to one of his friends and disciples for the purpose of putting together and publishing his loose manuscripts."

NEW PROPERTY OF GLYCERIN.—R. Godeffroy, on examining a chemically pure glycerin, found that when heated to 302° Fahr. it took fire, and burned with a steady, blue, non-luminous flame, without diffusing any odor or leaving a residue. The glycerin had the specific gravity 1.2609. This property enables glycerin of lower specific gravity to be burned by means of a lamp-wick. —*Medical Press and Circular.*

A REMARKABLE CENTENARIAN IN IRELAND.—The registrar of the Emly district, Tipperary, reports the following case: "The death of a centenarian," he says, "has been registered in my district during the quarter. She was a woman known in Emly by her maiden name, Nance Lee; she has been registered as 108 years of age, but I have reason to know, from a family tradition concerning her, that her age was 111 years. During her youth she was gifted with wonderful bodily strength and activity, and as a girl used to follow across country a pack of black-and-tan beagles kept by a neighboring gentleman. For forty years of her life she acted as a carrier of bread between Tipperary and Emly. She used to carry all her goods in a bag on her back, and thus heavily laden she used to traverse daily sixteen miles. Up to the last she was strong and in perfect use of her senses, and she walked to and from the parish chapel the Sunday before she died."—*Medical Press and Circular.*

OFFICIAL LIST

OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT U.S. ARMY, FROM JULY 20, 1875, TO JULY 26, 1875, INCLUSIVE.

JANEWAY, J. H., ASSISTANT-SURGEON.—Granted leave of absence for four months. S. O. 150, A. G. O., July 23, 1875.

AINSWORTH, F. C., ASSISTANT-SURGEON.—To report to the Commanding General, Department of the Columbia, for assignment to duty. S. O. 147, A. G. O., July 20, 1875.

BROWN, P. R., ASSISTANT-SURGEON.—To report in person to the Commanding General, Department of Dakota, for assignment to duty. S. O. 147, c. s., A. G. O.

The following-named Assistant-Surgeons (recently appointed) will report as follows for assignment to duty:

TAYLOR, B. W., in person, to the Superintendent United States Military Academy, West Point, New York, for temporary duty.

WORTHINGTON, J. CH., by letter, to the Commanding General, Military Division of the Atlantic.

COMEGYS, E. T., by letter, to the Commanding General, Military Division of the Atlantic.

REED, W., in person, to the Commanding Officer, Willet's Point, New York Harbor, for temporary duty at that post.

KILBOURNE, H. S., by letter, to the Commanding General, Department of the Missouri.

MERRILL, J. C., in person, to the Superintendent Mounted Recruiting Service, for temporary duty at St. Louis Barracks, Mo.

HALL, W. R., by letter, to the Commanding General, Military Division of the Atlantic.

BARNETT, R., by letter, to the Commanding General, Department of the Gulf.

TORNEY, GEO. H., in person, to the Commanding General, Military Division of the Atlantic, for temporary duty.

CRAMPTON, L. W., by letter, to the Commanding General, Department of the Gulf.

WOOD, M. W., in person, to the Commanding General, Department of the Platte.

TAYLOR, M. E., by letter, to the Commanding General, Department of the Gulf.

NEWLANDS, WM. L., by letter, to the Commanding General, Department of California.

SMITH, ROBERT E., by letter, to the Commanding General, Department of the Missouri.

SHANNON, WM. C., by letter, to the Commanding General, Military Division of the Atlantic.

TESSON, L. S., by letter, to the Commanding General, Department of the Missouri.

SPENCER, WM. G., by letter, to the Commanding General, Department of the South.

ROSSON, R. L., by letter, to the Commanding General, Military Division of the Atlantic. S. O. 147, c. s., A. G. O.

WORTHINGTON, J. CH., ASSISTANT-SURGEON.—Assigned to duty at Fort McHenry, Md. S. O. 143, Military Division of the Atlantic, July 24, 1875.

COMEGYS, E. T., ASSISTANT-SURGEON.—Assigned to duty at Fort Wadsworth, New York Harbor. S. O. 43, c. s., Military Division of the Atlantic.

TORNEY, G. H., ASSISTANT-SURGEON.—Assigned to duty at Fort Wood, New York Harbor. S. O. 143, c. s., Military Division of the Atlantic.